



EV/PI CONFERENCE

Characteristics of Good Program Surveillance

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Agenda

- ❑ **Results of DoD IG Review**
- ❑ **Insight vs. Oversight**
- ❑ **“Outcome-based” Program Planning**

- ❑ **EV One Book Requirements**
- ❑ **Insightful EV Program Surveillance**
 - **Baseline Maintenance Exercise**
 - **Performance Analysis Exercise**
- ❑ **EV Reporting**
- ❑ **Discussion - “Real World Examples”**
- ❑ **Q&A**



DoD IG Review

- **Review Focus - Quality of Earned Value Management support to PMs**
 - EVM system assessments
 - Earned Value data analysis
- **Results based on review of 5 CAOs and survey of 24 PMOs**
 - Only 7 of 24 PMOs said EVM data analysis performed by the CAO is “very important, value added analysis”
 - CAOs took average of 37 days to provide EV analysis to PMO



DoD IG Review Areas for Improvement

- ⦿ **Reports focused on historical information**
 - Simply re-stated CPR
 - └ Should forecast cost and schedule impacts of technical risks/issues
 - └ Evaluate proposed work-arounds
- ⦿ **Explain differences between supplier and DCMC EAC's**
 - └ Supplement formula-based EACs with supporting analysis



DoD IG Review Areas for Improvement

- ❑ **Develop metrics to measure health of supplier EVMS**
 - **Indicate areas of inadequate resource planning/control**
 - ❑ **May lead to poor C/S performance**
- ❑ **Improve timeliness of reporting**
 - ❑ **Request on-line access to supplier data**
 - ❑ **Synchronize PI reports with accounting cycle**
- ❑ **Improve training and share “best” practices**



Insight vs. Oversight

- ❑ **Oversight - Government dictates “how”...Mil Stds, Government review proposed process changes**
- ❑ **Insight - Government says “what” is required performance...use of supplier metrics to measure health of processes**
- ❑ **PST perspective**
 - Each functional area should have metrics
 - ❑ PI provides an “integrated” assessment



“Outcome-based” Planning

- ❑ One Book change in-work
- ❑ Program Integration process modified to conform with Government Performance and Results Act (GPRA)
- ❑ MOAs and Program Plans re-designed relative to program performance expectations
 - Establish quantitative measures
 - Basis for program surveillance activities



“Outcome-based” Planning Process



- ❑ **Outcome - Simple statement defining overall expected military utility**
- ❑ **Results and Processes - Specific performance expectations/applicable supplier processes**
- ❑ **Functions and metrics - DCMC surveillance functions/activities and evaluation criteria or metrics**



“Outcome-based” Planning Process

Example

- ❑ **Outcome:** Rapid replenishment of depleted cruise missile inventory
- ❑ **Results:** Eliminate production bottlenecks and expedite repair process
- ❑ **Processes:** Quality Engineering, Over and Above repair
- ❑ **Metrics:** First Article Inspection failure rate, repair/rework cycle time, schedule variance
- ❑ **Functions:** Detail specific QA, Eng functions



PI Process Initiatives

- **HQ Info Memo 99-245 requests comments on draft One Book changes:**
 - “Outcome-based” MOAs/Program Plans
 - No MOA -> No PI/PST
 - “Quad” Chart
- **PI “Road Shows” planned for Sep-Nov**
- **Development of “on-line” PI Resource Center**



Earned Value -- What does the PI/PST do?

- **One Book defines key PI/PST roles relating to Earned Value:**
 - Audit EVMS usage/implementation
 - Incorporate Earned Value data into PST risk/issue assessment activities
- **Specific activities outlined in “Characteristics of good insightful EVM program analysis” - HQ Info Memo 99-220**



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One Book - PI Chapter

- **Para 4F5b, “PI/PST responsible for surveillance of EV system and application on the program. PST shall...”**
 - **Analyze supplier C/S variances and corrective action**
 - **Assess supplier EAC’s and develop independent estimates**
 - **Support IBRs, similar PMO led reviews**



One Book - PI Chapter

- ❑ **FY99/00 Performance Goal 1.1.5 - Reduce % of contracts that have exceeded their C/S goals by more than 10%**
- ❑ **Para 4F6c, “PI shall ensure that program EVM data is included in CPM portion of AMS”**
 - Identify root causes of C/S variances and AMS input
 - For programs with C/S variances > 10% have “supplier get well” plan
 - Status on programs with >10% variances briefed at District/HQ MMRs
 - > Includes root cause info/CAO support to fix



One Book - EV Chapter

- ⌚ **Heads up! Draft EV Chapter calls out specific PI responsibilities:**
 - Program Plan shall include EVM metrics
 - PI/PST shall verify execution of EVMS
 - EVMS data shall be continually analyzed and incorporated into program risk assessment
 - PI/PST shall provide PMs with timely, independent predictive analysis of EV data
 - PI/PST responsible for analysis of C/S impacts by sub-tier suppliers



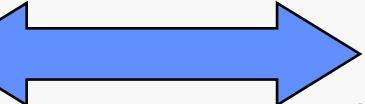
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Program Analysis Planning

- ❑ **Initial planning focuses on integrating cost/schedule/technical risk**
 - Identify high risk WBS elements
 - ❑ Assess resource planning/control
- ❑ **Follow-on planning -- Adjust surveillance based on results of EV program and system analyses**
- ❑ **Use PST meetings to discuss EV system/program status with entire team**



Program/EVMS Surveillance Plan

SYSTEM HEALTH  **PROGRAM HEALTH**

- **System Surveillance** - Process assures system meets EVMS guidelines
- **Program (contract) Surveillance** - Process assures adequate insight into program performance
- **System issues can impact program and visa-versa**
- **Integrated plan addresses BOTH program and system surveillance**



Program Surveillance Planning Considerations

❑ What?

- Plan should address all functions called out by MOA/LOD

❑ Who?

- ❑ Which PST members participate
- ❑ Don't just identify EVMS Monitor

❑ When?

- ❑ Task frequency/surveillance schedule

❑ How?

- ❑ Metrics/evaluation criteria

❑ Adjustments?

- ❑ Modify surveillance based on results



PST Support to IBR

- ❑ **PST should support IBR**
- ❑ **PST assesses realism of plans through control account review/CAM discussions**
 - Technical risk areas in the WBS
 - ❑ Extent of schedule development/logic
 - ❑ Validity/risk in resource budgets
 - ❑ Workflow to subs
- ❑ **Provides PST with knowledge necessary to conduct surveillance throughout the program**



The Control Account

- **Definition - Management control point consisting of work packages and planning packages, where accountability for performance is measured**
- **Key aspects of the control account:**
 - Time-phased schedule for overall task and sub-tasks (work packages)
 - Assigned labor and material dollars
 - Planned vs. actuals
 - Earned Value method used to determine in-process status



Earned Value Methods

- **Used to determine work progress**
- **Various methods used depending on type of work**
 - **Discrete** - specific end product/result
 - **Level of effort** - measure by passage of time
 - **Apportioned effort** - depends on other work



Earned Value Methods

- ❑ **EV methods for assigning work progress involve CAM judgment**
 - PST should understand CAM's rationale
 - Incorporate knowledge of outstanding issues/risks
- ❑ **PST reviews selection of EV method and ensures actuals reflect true progress**
- ❑ **Assessment requires detailed knowledge of work performed**



Assessing Labor

- **Schedule developed for work to be performed**
- **Cost is a function of rate and efficiency**
 - **Rate variance = (earned rate - actual rate) x actual hours**
 - **Efficiency variance = (earned hours - actual hours) x earned rate**



Assessing Material

- ❑ **Includes parts ordering, acceptance, and release--based on program need**
- ❑ **Cost is a function of price and usage**
 - ❑ **Price variance = (earned price - actual price) x actual quantity**
 - ❑ **Usage variance = (earned quantity - actual quantity) x earned price**



Verify Database/System Discipline

- **PST provides technical support to document reviews, CAM discussions**
 - **Review new work packages for technical risk, schedule, and budget realism**
 - **On existing packages, assess credibility of completed work -- % complete**



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Schedule Analysis

- **At program start, PST reviews schedule**
 - Proper inclusion of tasks and time phasing
 - Tasks correspond to WBS elements
 - Schedule traceability
 - > Control account <-----> IMS
 - Network relationships to other tasks
 - > Critical path can be determined
- **PST should periodically review schedules to ensure proper maintenance**
 - “rolling-wave”, re-planning, changes
- **Assess in relation to schedule variance**



The Performance Measurement Baseline

Definition

- **Total of control accounts/planning packages and Undistributed Budget**
- **Includes Negotiated Contract Changes + Authorized Unpriced Work**
- **Does not include Management Reserve (MR)**
- **PMB + MR = Contract Budget Base (CBB)**



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Revisions to the PMB

❑ Contract Changes

- Authorized and definitized/undefined

❑ Internal Replanning

- ❑ Individual tasks change
- ❑ MR may be added to PMB
- ❑ Performed at supplier discretion

❑ Formal Reprogramming

- ❑ Referred to as Over-Target Baseline (OTB)
- ❑ Remaining budget/schedule unrealistic
- ❑ Requires formal Government approval



Baseline Integrity

- **All changes accounted for in change log**
- **Contract changes should be incorporated in a timely manner**
- **Risk inherent in frequent re-planning**
- **PST follow-up on work transferred between accounts and associated with contract changes**
 - **Technical, schedule, budget realism**



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Review Undistributed Budget

- ☒ **Authorized contract effort not assigned to specific WBS elements**
 - Used during contract change process for un-negotiated or not fully defined work
 - ☐ Normally not held for more than two reporting cycles
 - ☐ Usage shown on CPR and UB Log
 - ➔ PI/EVMS Monitor reviews to ensure UB is distributed to control accounts in a timely manner



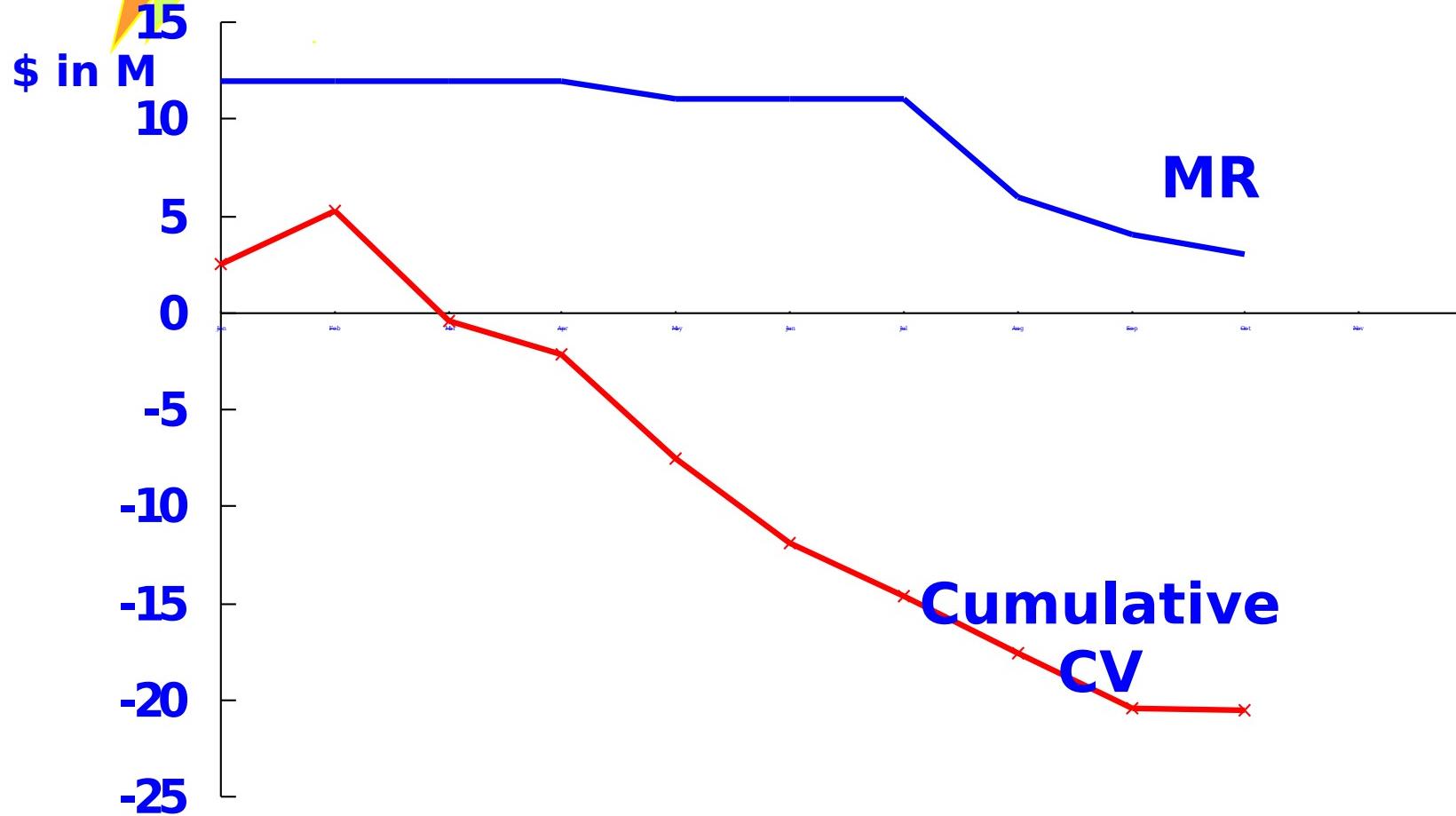
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Use of Management Reserve

- ❑ **MR is allocated for management control**
 - “Unknown unknowns”
 - ❑ Overhead rate adjustments
- ❑ **MR is NOT used to fund cost overruns**
- ❑ **Track usage via CPR and MR Log**
 - ❑ Ensure proper use
 - ❑ Cost variance must be assessed with respect to available MR



Management Reserve Usage



Management Reserve
Questions:
How fast is it being used?

How much?
Where? Proper use?

Time



Baseline Maintenance Exercise

Objective:
**Familiarize the audience
with interpretation of
baseline data contained
in Cost Performance
Reports**



Performance Data Analysis Objectives

- ❑ **Re-assess technical risk and resource management**
- ❑ **Analyze trends**
- ❑ **Verify accuracy of the performance data and determine effectiveness of corrective action**
- ❑ **Forecast cost/schedule impacts of issues and propose alternative work-arounds as necessary**



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Program Risk Indicators

- ❑ **Application of MR**
- ❑ **Changes to PMB**
- ❑ **Near term staffing increases**
- ❑ **Unresolved sub-supplier issues**
- ❑ **Schedule variance implies future cost variance**
- ❑ **Negative cumulative trends at lower WBS elements**
- ❑ **Unrealistic or changing LRE**



Manpower Analysis

- ❑ **Disconnects between movement of resources (CPR Format 4) and movement of budget (CPR Format 3)**
- ❑ **Movement of manpower towards “front-end”**
 - Indicates poor initial planning
- ❑ **Look for manpower increases prior to major milestones**
- ❑ **Other staffing metrics may be available**
- ❑ **Inquire about staff turn-over rate**



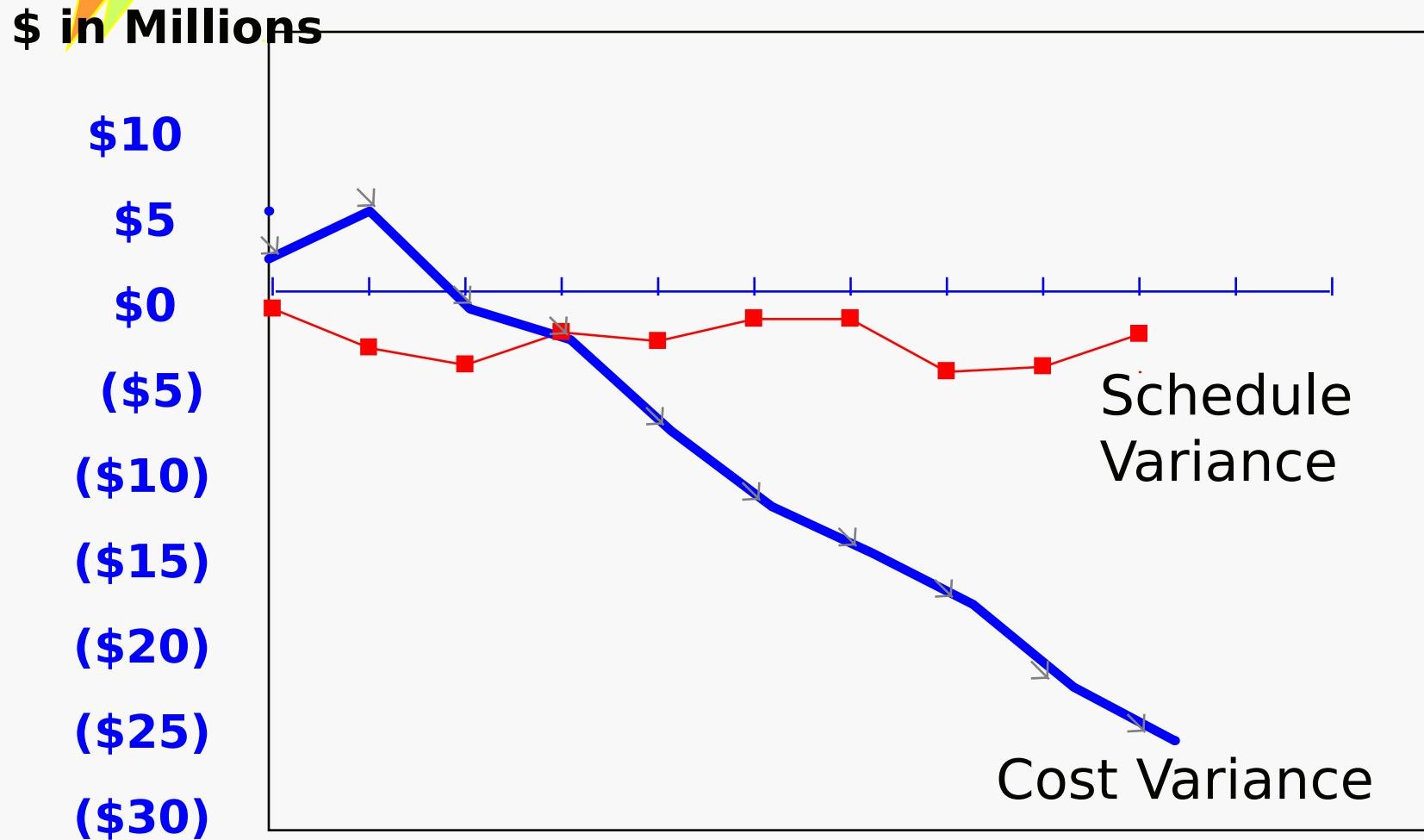
Difficulties with Subs

- ❑ Often large part (50-70%) of the prime contract value
- ❑ May involve high risk, specialized tasks
- ❑ C/S reporting may be limited
- ❑ PI/PST should:
 - Ensure EV requirements are properly flowed
 - ❑ Monitor how prime manages subs
 - ❑ Identify sub-supplier risks
 - ❑ Understand how issues impact prime



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Example Trend Chart





Assess CPR Data and Corrective Action

- ❑ **Compare WBS variances and LRE (CPR Format 1) with explanations (Format 5)**
 - **Analysis should identify problem, impact, corrective action**
 - **Is issue correctly identified?**
 - **Does explanation, LRE accurately quantify near term and overall program impact?**
 - **Are effective corrective actions proposed?**
- ❑ **Follow-up with supplier as necessary**



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PST Follow-up actions

- ❑ Relate variances to underlying technical issues
- ❑ Relate schedule variance to time-phased schedules
- ❑ Quantify near-term (1-3 month) impact
- ❑ Quantify impact to EAC
- ❑ Develop alternative work-arounds

Request lower level data and discuss with CAMs



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Understanding Program Impact

- ❑ **Supplier fully understands root cause?**
- ❑ **When will issue be corrected?**
- ❑ **Are all resources necessary to correct variances accounted for?**
 - Labor, materials, subcontracts
- ❑ **Impact to other WBS elements?**
- ❑ **Estimates incorporate past performance?**
- ❑ **Potential to reoccur?**



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Performance Data Analysis Exercise

Review 6 months CPR data. Draw conclusions about current contract status. Analyze variances and EACs. Consider additional information needed from the supplier.



Reporting to PMO

- ❑ **Discuss results of PST follow-up actions**
 - ❑ **Don't repeat CPR data**
 - ❑ **Forecast near-term (1-3 month) impacts**
 - ❑ **Assess supplier EAC--note areas of disagreement**
 - ❑ **Evaluate corrective action**
 - ❑ **Integrated technical, cost, schedule performance assessment**
- ❑ **Include results of “system” surveillance**
- ❑ **Take advantage of EV tools**
- ❑ **PST follow-up makes C/S data “timely”**



“Quad Chart” Requirement

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- ❑ Still in “draft” stage
- ❑ Provides quarterly summary status information to HQ
 - Keeps Gen Malishenko informed
 - ❑ Used to ID trends by supplier/PEO
- ❑ Current and 30/60/90 day forecast color ratings for all functional areas
 - ❑ Uses CPAR criteria
- ❑ Replaces need to forward copies of status reports



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Program Assessment “Quad Chart”

CONTACT NAME: DCMC CAO: BUYING COMMAND: PM:

CONTRACTOR: PI / PHONE: PEO: CLR:

ELEMENT	HISTORY					J	FORCAST		
	J	F	M	A	M		30	60	90
Cost Control	G	G	G	Y	Y	Y	Y	G	G
Schedule	G	Y	Y	Y	G	G	G	G	G
Product Assurance	G	G	G	G	G	G	G	G	G
Subcontract Mgt	R	R	Y	Y	Y	Y	Y	G	G
Program Mgt	Y	Y	Y	Y	Y	Y	Y	G	G
Engineering	G	G	G	G	G	G	G	G	G
Software	R	R	R	R	R	R	R	R	R

DCMC CONTRACTOR ASSESSMENT USING CPARS CRITERIA

Performance Based Outcomes

(Taken directly from the MOA)

Funding Data:Program Value: ULO:ACQ Stage: Contract Type:Period of Perf: Progress Payment:EVMS Data:

- CV:
- SV:
- % Comp:

Future Milestones: Date:

(Example PCA, FCA Milestone Decision)

Issues / Concerns Actions / Responsibility Closure Date



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Discussion “Real World Examples”

PST support to IBRs and “Re-baselining” activities

- Mr. Tom Casselberry - DCMC Van Nuys, TRW

Good techniques for variance and EAC analysis

- Mr. Wai Wong - DCMC Santa Ana, Boeing

Lessons learned applying Earned Value

- Mr. Steve Sacherski, DCMC Lockheed Martin Sanders